Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original): An electrochemical planarization apparatus for planarizing a metallized surface on a workpiece, said apparatus comprising:

a) a polishing pad;

b) a platen comprising conductive material and disposed proximate to said polishing pad, wherein said platen is configured to have a negative charge during at least a potion of a planarization process;

c) at least one electrical conductor positioned within said platen and having a first end connected to a power source; and

d) a workpiece carrier configured to carry a workpiece and press said workpiece against said polishing pad;

e) wherein said power source applies a positive charge to the workpiece via said at least one electrical conductor so that an electric potential difference between said metallized surface of said workpiece and said platen is created to remove at least a portion of said metallized surface from said workpiece.

2. (original): The apparatus of claim 1, further comprising a contact element which is formed of low electrical resistance material and is connected to a second end of said at least one electrical conductor and wherein at least a portion of said contact element is positioned within said polishing pad.

3. (original): The apparatus of claim 1, wherein said polishing pad is made of insulating material.

4. (original): The apparatus of claim 1, wherein said polishing pad is porous.

5. (original): The apparatus of claim 1, further comprising a solution application mechanism configured to supply a first electrolytic planarizing solution to a polishing surface of said polishing pad.

6. (original): The apparatus of claim 5, wherein said solution application mechanism comprises at least one channel formed in said platen through which said electrolytic planarizing solution may flow.

7. (original): The apparatus of claim 6, wherein said polishing pad has at least one aperture through which said electrolytic planarizing solution from said at least one channel may flow.

8. (original): The apparatus of claim 7, wherein said at least one aperture is configured to expose a portion of said platen to facilitate creation of said electric potential difference between said platen and said metallized surface.

9. (original): The apparatus of claim 5, wherein said polishing pad has grooves configured to facilitate distribution of said electrolytic planarizing solution.

10. (original): The apparatus of claim 1, wherein said polishing pad comprises windows configured to expose portions of said platen to facilitate creation of said electric potential difference between said platen and said metallized surface.

11. (original): The apparatus of claim 1, wherein said workpiece carrier is configured to cause relative motion between said workpiece and said polishing pad.

12. (original): The apparatus of claim 11, wherein said relative motion is selected from the group consisting of: linear motion, orbital motion, circular motion, a combination of linear and orbital motion, a combination of linear and circular motion, a combination of orbital and circular motion, and a combination of linear, orbital and circular motion.

13. (previously presented): The apparatus of claim 1, wherein said platen is configured to move in an orbital pattern.

14. (original): The apparatus of claim 1, wherein at least a portion of said platen comprises at least one of aluminum, titanium, gold, copper, tantalum and platinum.

15. (original): The apparatus of claim 5, wherein said electrolytic planarizing solution comprises at least one of electrolytes, oxidizers, complexing agents, surfactants and viscosity-controlling additives.

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16. (original): The apparatus of claim 1, wherein said metallized surface is of a material selected from the group consisting of: Cu, Cu/Al, Ni, Ag, Au, Ta, TaN, Ti, TiN, W, CoWP, NiP, and CoP.

17. (original): The apparatus of claim 2, wherein said contact element is formed of at least one of conductively-enhanced polymer material, ceramic material and inorganic fibers.

18. (original): The apparatus of claim 1, wherein said workpiece carrier is configured to press said workpiece against said polishing pad at a pressure no greater than approximately 1 psi.

19. (original): The apparatus of claim 5, wherein said electrolytic planarizing solution comprises at least one of a mineral acid, a salt, an oxidizer, a complexing agent, a viscosity agent, and a surfactant.

20. (original): The apparatus of claim 5, wherein said electrolytic planarizing solution comprises a film forming agent for facilitating the formation of a passivation layer on the metallized surface of the workpiece.

21. (original): The apparatus of claim 20, wherein said film forming agent comprises nitrogen – containing cyclic compounds.

22. (previously presented): The apparatus of claim 20, wherein said film forming agent comprises at least one of imidazole, benzotriazole, benzimidazole, benzothiazole, adenine, proline, quinaldic acid, triazole, benzofuroxan, benzothiadiazole, phenylenediamine, catechol, aminophenol, mercaptobenzothiazole, mercaptobenzotriazole, mercaptobenoxazole, melamine and thiadiazole.

23. (original): The apparatus of claim 1, further comprising at least a first group and a second group of electrical conductors, wherein said power source supplies a first current to said first group and a second current to said second group, said first current being different from said second current.

24. (previously presented): The apparatus of claim 1, wherein the apparatus is configured to monitor a change in an electrical resistance across the metallized surface on the workpiece upon the removal of the at least a portion of the metallized surface.

25. (original): The apparatus of claim 1, wherein said electric potential difference alternates between a first electric potential difference and a second electric potential difference.

26. (original): The apparatus of claim 25, wherein said first electric potential difference is zero.

27. (original): The apparatus of claim 1, wherein said electrical potential difference is constant.

28. (original): The apparatus of claim 1, further comprising a temperature control mechanism for counteracting the generation of heat at the metallized surface during planarization.

29. (original): The apparatus of claim 28, further comprising a solution application mechanism configured to supply an electrolytic planarizing solution to a polishing surface of said polishing pad and wherein said temperature control mechanism comprises a cooler for cooling said electrolytic planarizing solution before said solution is applied to said polishing pad.

30. (original): The apparatus of claim 28, wherein said workpiece carrier comprises a heat exchange fluid for regulating the temperature of said workpiece.

31. (original): The apparatus of claim 1, wherein said platen comprises heat conductivity material and wherein said platen is configured to be temperature controlled by a heat exchange fluid circulating therethrough.

32. (original): The apparatus of claim 1, wherein a distance between said platen and the metallized surface of the workpiece is not greater than approximately 3mm.

33. (original): The apparatus of claim 32, wherein said distance is no greater than approximately 1mm.

34. (original): The apparatus of claim 33, wherein said distance is no greater than approximately 2000 angstroms.

35. (original): The apparatus of claim 5, wherein said solution application mechanism is configured to supply a second electrolytic planarizing solution to a polishing surface of said polishing pad.

36. (currently amended): A method of planarizing a metallized surface on a workpiece, the method comprising:

a) providing a polishing pad;

b) providing a platen having a top end and a bottom end formed of a conductive material and disposed proximate to said polishing pad;

c) providing at least one electrical conductor disposed within said platen extending from the top end to the bottom end of said platen;

d) pressing said workpiece against said polishing pad while causing relative motion between said workpiece and said polishing pad;

e) supplying a first electrolytic solution to a polishing surface of said polishing pad; and

f) applying an electric potential difference between said metallized surface on said workpiece and said platen by applying a negative charge to said platen and a positive charge to said at least one electrical conductor during said pressing to remove at least a portion of said metallized surface from the workpiece.

37. (original): The method of claim 36, wherein said electrolytic planarizing solution is supplied to said polishing surface through at least one channel formed in said platen.

38. (original): The method of claim 36, wherein said relative motion is chosen from the group consisting of: linear motion, orbital motion, circular motion, a combination of linear and orbital motion, a combination of linear and circular motion, a combination of orbital motion and circular motion, and a combination of linear, orbital and circular motion.

39. (previously presented): The method of claim 36, further comprising moving said platen in an orbital pattern.

40. (original): The method of claim 36, wherein applying an electric potential differences comprises applying a constant electric potential difference.

41. (original): The method of claim 36, wherein applying an electrical potential difference comprises applying an electric potential difference which alternates between a first electric potential difference and a second electric potential difference.

42. (original): The method of claim 41, wherein said first electric potential difference is zero.

43. (original): The method of claim 36, wherein said pressing said workpiece against said polishing pad comprises pressing said workpiece against said polishing pad at a pressure no greater than approximately 1 psi.

44. (original): The method of claim 36, further comprising providing at least a first group of electrical conductors and a second group of electrical conductors, wherein said first group is supplied with a first current and said second group is supplied with a second current.

45. (original): The method of claim 36, further comprising supplying a second electrolytic planarizing solution to a polishing surface of said polishing pad.

46. (original): The method of claim 36, further comprising cooling said first electrolytic planarizing solution before supplying said solution to said polishing pad.

47. (original): The method of claim 36, wherein providing a platen comprises providing a platen of heat conductivity material through which a heat exchange fluid circulates.

48. (original): The method of claim 36, further comprising circulating a heat exchange fluid proximate a surface of said workpiece to counteract the generation of heat at the metallized surface of the workpiece.

49. (original): The method of claim 36, further comprising, during said pressing, maintaining a distance between said platen and the metallized surface of no greater than 3mm.

50. (original): The method of claim 36, further comprising, during said pressing, maintaining a distance between said platen and the metallized surface of no greater than 1mm.

51. (original): The method of claim 36, further comprising, during said pressing, maintaining a distance between said platen and the metallized surface of no greater than 2000 angstroms.

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52. (previously presented): The method of claim 36, further comprising monitoring a change in an electrical resistance across the metallized surface on the workpiece as the at least a portion of the metallized surface is removed.

53. (original): The method of claim 36, wherein said supplying a first electrolytic solution comprises supplying an electrolytic solution having at least one of a mineral acid, a salt, an oxidizer, a complexing agent, a viscosity agent, and a surfactant.

54. (original): The method of claim 36, wherein said supplying a first electrolytic solution comprises supplying an electrolytic solution having a film-forming agent for facilitating the formation of a passivation layer on the metallized surface of the workpiece.

55. (original): The method of claim 36, wherein said supplying a first electrolytic solution comprises supplying an electrolytic solution having a film-forming agent formed of nitrogen-containing cyclic compounds.

56. (previously presented): The method of claim 36, wherein said supplying a first electrolytic solution comprises supplying an electrolytic solution having a film-forming agent comprised of at least one of imidazole, benzotriazole, benzimidazole, benzothiazole, adenine, proline, quinaldic acid, triazole, benzofuroxan, benzothiadiazole, phenylenediamine, catechol, aminophenol, mercaptobenzothiazole, mercaptobenzotriazole, mercaptobenoxazole, melamine and thiadiazole.

57. (currently amended): An apparatus for removing metal from a metallized surface of a workpiece, comprising:

a) a polishing pad;

b) an electrically conductive surface disposed proximate to said polishing pad;

c) at least one conducting element disposed <u>within the electrically conductive surface</u> proximate the metallized surface of the workpiece and remote from an edge of said metallized surface;

d) a workpiece carrier configured to press the workpiece against said polishing pad; and

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e) a power source configured to apply a negative charge to ~~an electric potential between the metallized surface of the workpiece and~~ the electrically conductive surface and a positive charge to said at least one conducting element.

58. (original) The apparatus of claim 57, further comprising at least one passage disposed in said polishing pad so that the metallized surface of the workpiece and said electrically conductive surface are in fluid communication through said passage when the workpiece is pressed against said polishing pad.

59. (original) The apparatus of claim 58, wherein said electrically conductive surface comprises the surface of a polishing platen.

60. (original) The apparatus of claim 59 further comprising a conduit disposed in said polishing platen, wherein said conduit is in fluid communication with said passage.

61. (original) The apparatus of claim 57, wherein said polishing pad comprises a plurality of first parallel grooves.

62. (original) The apparatus of claim 61, wherein said polishing pad comprises a plurality of second parallel grooves positioned in intersecting relation with said first parallel grooves.

63. (original) The apparatus of claim 62, further comprising at least one fluid passage disposed in said polishing pad, wherein said at least one fluid passage is in fluid communication with at least one of said first and second parallel grooves.

64. (original) The apparatus of claim 63, wherein said electrically conductive surface comprises a polishing platen having at least one conduit positioned therethrough, and wherein said at least one conduit is in fluid communication with said at least one fluid passage.

65. (original) The apparatus of claim 57, further comprising a contact element formed of low electrical resistance material connected to said conducting element, wherein said contact element is in electrical communication with said conducting element and the metallized surface.

66. (original) The apparatus of claim 57, wherein said workpiece carrier is configured to cause relative motion between said workpiece and said polishing paid.

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67. (previously presented): The apparatus of claim 24, wherein the apparatus is further configured to detect an endpoint of planarization of the workpiece.

68. (previously presented): The method of claim 52, further comprising detecting an endpoint of planarization of the workpiece.

69. (previously presented and currently amended): An apparatus for removing metal from a metallized surface of a workpiece, the apparatus comprising:

a polishing pad atop a rigid platen;

a driver motor operably connected to said rigid platen to produce orbital motion thereof;

an electrically conductive surface disposed proximate to said polishing pad and said platen;

a plurality of contact elements disposed at least partially in the polishing pad proximate the metallized surface of the workpiece and remote from an edge of the metallized surface;

a workpiece carrier configured to press the workpiece against the polishing pad; and

a power source connected to said contact elements and said electrically conductive surface ~~and~~ configured to apply a negative charge to ~~an electric potential difference between the metallized surface of the workpiece and~~ the electrically conductive surface and a positive charge to the contact elements in order to create an electric potential difference to thereby remove at least a portion of the metallized surface from the workpiece.

70. (previously presented and currently amended): An apparatus for removing metal from a metallized surface of a workpiece, said apparatus comprising:

a polishing pad;

a conducting surface disposed proximate the polishing pad; and

a plurality of contact elements disposed within said polishing pad, said contact elements configured to contact the metallized surface of the workpiece when the workpiece is pressed against the polishing pad, said contact elements further configured for electrical communication with a power source for applying a positive

charge to said contact elements to create an electric potential between the metallized surface and the conducting surface disposed proximate the polishing pad.

71. (previously presented): The apparatus of claim 70, wherein said plurality of contact elements is formed of at least one of conductively-enhanced polymer material, ceramic material and inorganic fibers.

72. (previously presented and currently amended): A method for removing metal from a metallized surface on a workpiece, the method comprising:

providing a polishing pad;

providing a conductive surface disposed proximate the polishing pad;

providing a plurality of contact elements disposed within said polishing pad;

pressing said workpiece against said polishing pad while causing relative motion between said workpiece and said polishing pad;

causing said metallized surface of said workpiece to contact said plurality of contact elements during said pressing; and

applying a positive charge to said contact elements and a negative charge to said conductive surface to create an electric potential difference between the plurality of contact elements and the conductive surface.

73. (previously presented): The method of claim 72, further comprising supplying an electrolytic solution to a polishing surface of said polishing pad.

74. (previously presented): The apparatus of claim 57, further comprising a driver motor operably connected to the polishing pad and the electrically conductive surface to produce orbital motion thereof.

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